

REMARKS

Claims 1, 12, 13, 17, 21 and 27-29 have been amended. Claims 1-34 remain for further consideration. No new matter has been added.

The objections and rejections shall be taken up in the order presented in the Official Action.

2. Claims 26-28 currently stand objected to for informalities.

Claims 26-28 have been renumbered as claims 27-29.

3-4. Claims 1-4, 12-19, 21 and 24-27 currently stand rejected for allegedly being anticipated by Japanese Patent JP 07-267003 to Otani (hereinafter “Otani”).

Claim 1

Amended claim 1 recites a sound system for a vehicle having at least one door. The sound system includes:

“a loudspeaker having a resonant volume formed by a first cavity situated inside of the at least one door and a second cavity situated inside a structural component of a frame of the at least one door and outside of any other door within the vehicle; and

means for pneumatically coupling the first and second cavities to form the resonant volume.” (cl. 1).

The Official Action contends that “*Otani teaches a sound system for a vehicle comprising at least one door (see fig. 1, (1)), said sound system comprising: a loudspeaker (2) having a resonant volume formed by a first cavity (5a) situated inside of the door; and by a second cavity*

(5a') situated outside of the door; and means for pneumatically coupling said first and second cavities to form said resonant volume (5a, 5a' and see abstract)." (Official Action, pgs. 2-3).

Otani fails to anticipate amended claim 1 because Otani fails to disclose the various features of amended claim 1; for example, including *"a second cavity situated inside a structural component of a frame of the at least one door and outside of any other door within the vehicle"*. The Official Action is incorrect in its contention that a "second cavity" is designated by reference numeral 5a'. Instead, reference numeral 5a' merely indicates an opening in a center pillar 4 of the vehicle between the front and rear doors on one side of the vehicle. (Pars. [0021], [0025], Drawings 1-2). An opening in a pillar can not be construed as a cavity, and thus the second cavity feature can not be construed as reading on an opening in the pillar.

Otani teaches that for the first and second embodiments or examples disclosed therein (i.e., those illustrated in Drawings 1-2), the first cavity is located in a front door 1 of the vehicle while the second cavity is located in a rear door 3 of the vehicle. *"If this invention is followed, the capacity of a cabinet will be made to increase by making the building envelope or a rear door connect with a front door through opening."* (Par. [0022]). This is in marked contrast to the language of amended claim 1 where the second cavity is not only located outside of the at least one door but is also located outside of any other door within the vehicle. Also, Otani fails to teach or suggest that the tubed pipe 6 (Drawings 1-2) defines a cavity that comprises the resonant volume of the speaker 2. Instead, Otani clearly discloses that this tubed pipe 6 runs through the center pillar 4 and connects the cavity in the front door 1 with the cavity in the rear door 3. Drawings 1-2 both illustrate that the tubed pipe 6 is of a volume that is much smaller than the volume of the overall center pillar 4 in which it is located and even smaller than the volume of the cavities in both the front and rear doors. In addition, Otani clearly discloses that the front

door 1 defines a first cavity while the rear door 3 defines a second cavity (Par. [0026]), and fails to identify the tubed pipe 6 as any type of cavity, and certainly not one that contributes to the volume utilized by the speaker. As a result, Otani cannot be construed to teach or suggest that the tubed pipe 6 comprises a cavity by itself or comprises a part of the cavities of the front or rear doors 1, 3. The tubed pipe 6 simply pneumatically connects the cavities in the front and rear doors. Thus, the first and second embodiments of Otani fail to anticipate the present claimed invention because it fails to disclose the claimed features of *“a second cavity situated inside a structural component of a frame of the at least one door and outside of any other door within the vehicle”*.

The third embodiment or example disclosed in Otani (Drawing 3) expands the volume available to the speaker 2 located in the front door 1 by connecting the volume of the trunk 11 of the vehicle to the cavity in the rear door 3 by a tubed pipe 13. (Pars. [0030]-[0032]). However, this embodiment still includes the front the rear doors 1, 3 connected together. In addition, the tubed pipe 13 functions much like the tubed pipe 6 discussed above (i.e., as a connector between two cavities). Thus, for the reasons stated above, the third embodiment fails to anticipate the present claimed invention because it fails to disclose the claimed features of *“a second cavity situated inside a structural component of a frame of the at least one door and outside of any other door within the vehicle”*. Further, the volume of the trunk fails to anticipate the feature of amended claim 1 of *“a second cavity situated inside a structural component of a frame of the at least one door”* because the trunk is not part of a door frame.

The fourth embodiment or example disclosed in Otani (Drawing 4) expands the volume available to the speaker 21 located in the front door 20 on one side of the vehicle by connecting the cavity of this door 20 to a cavity in a front door 30 on the other side of the vehicle by a

connection pipe 40. (Pars. [0034]-[0035]). However, much like the first two embodiments discussed above, this fourth embodiment includes two front doors 20, 30 pneumatically connected. However, since this embodiment of Otani pneumatically connects the two front doors 20, 30 with the connection pipe 40, this embodiment is incapable of anticipating the subject matter of claim 1, which includes *“a second cavity situated inside a structural component of a frame of the at least one door and outside of any other door within the vehicle”*.

A 35 U.S.C. §102 rejection requires a single prior art reference that discloses each feature of the claimed invention. Otani is incapable of anticipating the subject matter of amended claim 1 since it fails to disclose various features of amended claim 1, as discussed above, including *“a second cavity situated inside a structural component of a frame of the at least one door and outside of any other door within the vehicle”*.

Claim 21

Claim 21 recites a sound system for a vehicle having at least one door. The sound system includes:

“a loudspeaker having a resonant volume formed by a first cavity situated inside of the at least one door and by a second cavity situated outside of the at least one door, where the second cavity comprises a volume defined within hollow parts of a support frame of the vehicle; and
means for pneumatically coupling the first and second cavities to form the resonant volume.” (cl. 21).

The Official Action contends that *“Otani teaches that a sound system for a vehicle having at least one door (see fig. 1), the sound system comprising: a loudspeaker (2 in fig. 1) having a resonant volume formed by a first cavity (5a) situated inside of the door and by a second cavity (5a') situated outside of the door, where the second cavity comprises a volume defined within*

hollow parts (5a', 5b) of a support frame of the vehicle; and means for pneumatically coupling the first and second cavities (5a, 5a') to form the resonant volume (see detailed description page 3 [0024]-[0026])." (Official Action, pg. 4).

Otani fails to anticipate claim 21 because Otani fails to disclose the claimed feature of where *"the second cavity comprises a volume defined within hollow parts of a support frame of the vehicle"*. The Official Action is incorrect in its various contentions noted above, including that the first cavity is defined by the reference numeral 5a. Reference numeral 5a instead merely defines an opening in the rear portion of the front door 1 (Constitution, Par. [0024], Drawings 1-2). Also, reference numeral 5a' does not define a second cavity, but instead defines an opening in a center pillar 4. (Par. [0025], Drawings 1-2). Further, reference numerals 5a' and 5b do not define a volume defined within hollow parts of a support frame of the vehicle. Similar to reference numeral 5a', reference numeral 5b defines an opening in a rear portion of the center pillar 4. (Pars. [0024]-[0025]).

Notwithstanding the foregoing and similar to the discussion above with respect to amended claim 1, the tubed pipe 6 located within the center pillar 4 between the front and rear doors 1, 3 (Drawings 1-2) does not define a cavity that comprises the resonant volume of the speaker 2. Instead, Otani clearly discloses that this tubed pipe 6 runs through the center pillar 4 and pneumatically connects the cavity in the front door 1 with the cavity in the rear door 3. In addition, Otani clearly discloses that the front door 1 defines a first cavity while the rear door 3 defines a second cavity (Par. [0026]). As a result, Otani cannot be construed to teach or suggest that the tubed pipe 6 comprises a cavity by itself or comprises a part of the cavities of the front or rear doors 1, 3. Thus, Otani fails to anticipate the present claimed invention because it fails to

disclose the claimed features of “*the second cavity comprises a volume defined within hollow parts of a support frame of the vehicle*”.

Claim 27 (now renumbered as claim 28)

Amended claim 28 recites a sound system for a vehicle having at least one door. The sound system includes:

“a loudspeaker having a resonant volume formed by a first cavity situated inside of the at least one door and by a second cavity situated outside of the at least one door, where the second cavity comprises a volume inside a structural component of the frame of the at least one door; and

means for pneumatically coupling the first and second cavities to form the resonant volume.” (cl. 28).

Claim 27 (now claim 28) stands rejected for the same reasons as claim 21. Amended claim 28 recites the feature “*where the second cavity comprises a volume inside a structural component of the frame of the at least one door*”. Otani fails to anticipate amended claim 28 because Otani fails to disclose such a feature. Similar to the discussion above with respect to amended claim 1 and claim 21, the tubed pipe 6 located within the center pillar 4 between the front and rear doors 1, 3 (Drawings 1-2) can not construed as a cavity which comprises the resonant volume of the speaker 2. The Official Action reads the claimed “means for pneumatically coupling” onto elements 5a, 5a’ and thus can not also read the claimed second cavity onto elements 5a, 5a’ since the claimed means for pneumatically coupling connects the first and second cavities. Instead, Otani clearly discloses that this tubed pipe 6 runs through the center pillar 4 and Otani clearly discloses that the front door 1 defines a first cavity while the rear door 3 defines a second cavity (Par. [0026]), and fails to identify the tubed pipe 6 as any type of cavity, and certainly not one that contributes to the resonant volume utilized by the speaker. As a result, Otani cannot be

construed to teach or suggest that the tubed pipe 6 comprises a cavity by itself or comprises a part of the cavities of the front or rear doors 1, 3. It is respectfully submitted that if Otani intended this tubed pipe 6 located within the center pillar 4 (or the entire volume of the center pillar 4 for that matter) to contribute to the volume used by the speaker, Otani would have disclosed or suggested this feature. Thus, Otani fails to anticipate the present claimed invention because it fails to disclose the claimed features of “*where the second cavity comprises a volume inside a structure of a frame of the vehicle*”.

As a result, it is submitted that the anticipation rejection of amended claim 28 is moot and should be removed, and that amended claim 28 is in condition for allowance.

5-6. Claims 5-11, 20, 22-23, 28 and 30-34 currently stand rejected for allegedly being obvious in view of Otani.

It is respectfully submitted that the rejection of these claims is moot, since each of claims 5-11, 20, 22-23, 28 and 30-34 depends directly or indirectly from amended claims 1, 21 and 27, which are patentable for at least the reasons set forth above.

For all the foregoing reasons, reconsideration and allowance of claims 1-34 is respectfully requested.

If a telephone interview could assist in the prosecution of this application, please call the undersigned attorney.

Respectfully submitted,

A handwritten signature in cursive script, reading "Patrick O'Shea", written over a horizontal line.

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